

Technological capabilities and global value chains: insights from Spanish SMEs in the hotel industry

Role of international tour operators

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Abstract

Purpose – This study explores the role of international tour operators as the agents assuming the governance and the upgrading of the tourism global value chains (TGVCs), with a special focus on their influence on the development of technological capabilities (TCs) in the hotel industry.

Design/methodology/approach – The data used in this article originates from a survey carried out in 2016 on Spanish small and medium-sized hotel companies. An ordinal regression analysis is employed to test the hypotheses proposed in this research.

Findings – This study finds that tour operators exert a positive effect on the technological upgrading process in the hotel industry by stimulating small and medium-sized enterprises (SMEs) to invest in TCs. The causal mechanisms through which these effects take place differ across the various stages of the relationship between hotel companies and tour operators.

Practical implications – The results have implications both for hotel management in terms of how hotels take advantage of technological upgrading to become more competitive, and for public administrations in terms of what measures can boost the development of hotel TCs in order to increase their added value.

Originality/value – To date, very few studies have analysed the tourism sector based on the influence on the development of TCs of SME hotels by combining GVC concepts and the resource-based view. It is also the first time that the causal mechanisms are shown to explain such influences.

Keywords Tour operator, Global value chain, Tourism, Technological capability, Hotel

Paper type Research paper

Introduction

Prior research has suggested that tour operators, who press for reductions in hotel rates and profit margins, hamper hotel upgrading processes and can lead to the deterioration of tourist destinations (Bastakis *et al.*, 2004). Furthermore, those hotels with a strong dependence on tourism intermediaries could be, in practice, outsourcing certain technological capabilities (TCs) to tour operators and online travel agencies, especially those activities related to the marketing functions of the hotels (Kusluvan and Karamustafa, 2001; Mosedale, 2006). This could increase the bargaining power of tourism intermediaries in their relationship with hotel companies (Romero *et al.*, 2020).

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This article is part of the research project entitled “Tourism SMEs, GVCs and Innovation” -INTURPYME- (ECO2013-42889-P; Spanish Ministry of Economy and Competitiveness) and also benefitted from the project “Entrepreneurial factors, digital ecosystems, and digital transformation of SMEs” -DIGIPYME- (PID2020-113384GB-I00; Spanish Ministry of Science and Innovation, National Programme for Knowledge Generation and Scientific and Technological Strengthening of the RDI System MCIN/AEI/10.13039/501100011033).



However, the scope of the influence exerted by tour operators remains unclear since other studies have suggested that beyond a negative effect on hotel profit margins, the performance of tourism suppliers is positively affected by the supply chain management applied by tour operators (Ibarnia *et al.*, 2020; Sigala, 2008). In this respect, tour operators could exert a positive influence on certain processes that lead to improved technology and innovation (Christian, 2016; Romero and Tejada, 2020; Rønningen, 2010). From this perspective, tour operators could act as a transfer channel of new technology, knowledge and skills to small tourism companies, and could encourage those hotels that are interested in collaborating with them to adopt new technologies and technical capabilities (Romero and Tejada, 2020).

The literature on global value chains (GVCs) could prove to be beneficial for this ongoing debate in the field of tourism research. Although, in general, this literature has focused more on the manufacturing sector than on the service sector (McWilliam *et al.*, 2020), over the last decade, a growing number of studies in the tourism field have used several concepts of the GVC theoretical framework to analyse certain aspects of the supply and demand of hotel companies (Jiang *et al.*, 2022; Mosedale, 2006). Specifically, in those studies that analyse the relationship between global tourism intermediaries and small and medium-sized enterprise (SME) hotels, the concepts of governance and upgrading have proved to be very useful (Romero and Tejada, 2011).

In this regard, several authors have highlighted the role of tour operators as agents who take on the coordination of tourism global value chains (TGVCs) (Christian, 2016; Picazo and Moreno-Gil, 2018; Romero *et al.*, 2020). However, the patterns of governance and upgrading in TGVCs constitute an even greater issue that calls for a much deeper analysis (Romero and Tejada, 2020).

This study aims to contribute to the aforementioned debate by specifically examining the role that global tourism intermediaries in general, and tour operators in particular, as leaders of TGVCs, could play in encouraging SME hotels to invest in TCs. If this were to happen, a process of upgrading could then take place in SME hotels. This is relevant since if this effect were significant, then the evaluation of the impact of tour operators on hotels would be partial and biased when it only focused on the immediate dependence and the effect on the profit margins without taking into account that the reliance on tour operators could also enhance mechanisms for greater independence in the future and, consequently, could improve the competitiveness and results of hotel firms (Romero *et al.*, 2020).

In this paper, the determinants of SME investments in their TCs are analysed within the framework of the resource-based view (RBV) to understand how upgrading processes can be incorporated into the value chain. To the best of our knowledge, no previous study has analysed the investment in TCs in the hotel industry from these perspectives while focusing on the role played by tourism intermediaries in the TGVC (see Kruesi and Bazelmans (2022)). Furthermore, this is the first time the causal mechanisms that explain the effects of tour operators on TCs in the hotel industry are investigated.

Although the roles played by several types of tourism intermediaries are explored in this paper, tour operators are the main focus of this study. Previous studies suggest that they are the agents who assume the governance of TGVCs (Erkuş-Öztürk and Terhor, 2010; Jiang *et al.*, 2022; Picazo and Moreno-Gil, 2018; Romero and Tejada, 2020). For the purposes of our study, the label *tour operator* will refer to a foreign (not Spanish) firm that provides a package of all or most of the components of an offered trip, specifically hotel stays, in order to sell them to tourists. These tour operators directly hire hotels, among other tourism firms, and they have been considered as the most important distribution channel for room reservations (Orfila-Sintes and Mattsson, 2009).

The data set utilised for this investigation originates from a survey carried out in 2016 on 322 Spanish small and medium-sized hotel companies. In this respect, our results indicate that foreign tour operators positively influence the TCs of SMEs in the hotel sector. In contrast, traditional and online travel agencies appear to have no influence on the process of upgrading hotels.

Literature review

In this section, the previous literature on the involvement of tour operators in TGVCs is first reviewed, and secondly, the relevance of TCs is discussed as a dimension of competitive upgrading of hotel companies.

Global value chains and tour operators in the hotel industry

The GVC framework has vindicated the importance of international links in accessing technological knowledge and in supporting innovation and learning (Li *et al.*, 2019; Morrison *et al.*, 2008; Tieng *et al.*, 2022). The literature on GVCs has focused primarily on the manufacturing sector (OECD, 2008), but certain concepts and aspects of the methodology of that theoretical approach have been used by a growing number of studies in the tourism sector for the last two decades, specifically when the relationship between global tourism intermediaries and tourism firms is relevant in the analysis being carried out (Christian, 2016; Li *et al.*, 2019; Picazo and Moreno-Gil, 2018; Romero *et al.*, 2020).

There are two key concepts in the GVC analysis: governance and upgrading. The “governance” concept refers to the coordination of various actors involved in the chain, and also to the patterns of power asymmetry in the organisation of value chains (You *et al.*, 2018). Certain key actors assume a leading role for the inter-firm division of labour and supervise the remaining participants in each GVC. A typology of governance based on the nature of the coordination and organisation mechanisms of the GVCs has also been proposed, which establishes alternative patterns of governance within a range between two extreme regimes: coordination through the market (arm’s-length markets), and coordination through hierarchy (vertical integration) (Gereffi *et al.*, 2005). Meanwhile, several types of governance emerge that imply different levels of subordination of the local SMEs with respect to the leaders (Song *et al.*, 2013).

Regarding the tourism sector, certain authors have highlighted how tour operators are leading the TGVC by taking on the task of coordinating the chain and controlling the tourism product (Jiang *et al.*, 2022; Romero and Tejada, 2020). The hotel firms participating in TGVCs can be coordinated principally via market relations. This is facilitated by the fact that hotel quality standards imply a clear definition of the characteristics of their services (Romero *et al.*, 2020). Furthermore, hotels use a variety of channels and intermediaries to commercialise their services, including tour operators, traditional and online travel agencies and direct sales to tourists (for example, via their web page) (Law *et al.*, 2015).

However, hotels may find themselves subordinated to specific intermediaries, mainly tour operators and online travel agencies, when the latter two assure hotel companies a significant percentage of room occupancy (Romero and Tejada, 2011). A high concentration of their sales going towards certain intermediaries could therefore lead to asymmetrical negotiating power regarding the conditions of the services contracted. This has been studied in “sun, sea and sand” destinations where hotels may strongly depend on tour operators to attract foreign tourists (Bastakis *et al.*, 2004).

The second key concept in GVC analysis is that of upgrading. This concept is closely related to that of innovation, but it goes further than a mere increase in production efficiency (Jiang *et al.*, 2022). Upgrading implies an ascending process in the value chain, whereby companies abandon activities in which production costs are the major factor for competitiveness and entrance barriers are low (Su *et al.*, 2021). The GVC literature points out that the prevalent governance regime influences the upgrading of SMEs (Romero and Tejada, 2020; Su *et al.*, 2021). However, no consensus exists on the sign of this influence (Jiang *et al.*, 2022).

On the one hand, participation in GVCs provides SMEs with the opportunity to upgrade via learning from global leaders and benefitting from technological and knowledge spillovers (i.e., technological transfer and skill development) (Gereffi and Fernandez-Stark, 2016). Furthermore, insertion of small and medium-sized firms into GVCs can improve their access to consumers and suppliers worldwide, and this can also create additional incentives for innovation (Mehta, 2022).

Conversely, other studies find that the firms participating in a GVC are subordinated to actors that exert control over the chain (Jiang *et al.*, 2022). This dependence undermines the ability of SMEs to innovate and, therefore, may limit their capacity to generate added value (OECD, 2008). Thus, in certain cases, leading companies would be interested in increasing high-level product functions that imply more added value and could therefore try to block the upgrading processes of their suppliers. Overall, the GVC literature suggests that network-based chains have greater positive effects on the upgrading of SMEs than do quasi-hierarchical value chains, and that the market-based relationships remain the least favourable governance pattern for the upgrading of SMEs (Gereffi and Fernandez-Stark, 2016).

In this respect, the evidence regarding the tourism sector presents mixed results. On the one hand, research has found a negative impact of tour operators that restricts innovation in the local firms with which they operate. Bastakis *et al.* (2004) pointed out that the bargaining power of tour operators can constrain both the profitability and return on investment of SMEs, thereby affecting the amount of financial resources that can be employed to invest in service enhancement and renovations of the infrastructures. This could lead hotel companies to become stuck in a “vicious cycle” that reduces their prices and deteriorates the quality of their services (Bastakis *et al.*, 2004).

Conversely, Rønningen (2010) defended the positive impact of tour operators in SMEs in a case study for nature-based tourism in Norway. According to said analysis, tour operators act as a transfer channel, by providing new technology, knowledge and skills to the small tourism companies with which they operate. Tour operators have an incentive to support their suppliers in terms of improving their services when this option implies lower transaction costs than those associated with substituting such suppliers. Christian (2016) points out that the governance relationships between tour operators and accommodation suppliers directly impact upgrading in the hotel sector in the cases of Costa Rica, Vietnam and Jordan. Furthermore, Williams and Shaw (2011) point out that tourism firms are relatively reliant on international value chains in order to innovate. In this respect, Sundbo *et al.* (2007) indicate that the participation in non-local networks boosts hotel innovation by means of favouring the professionalisation of the hotel management. Likewise, other studies suggest that tour operators may influence hotel innovation positively (Romero and Tejada, 2020).

Technological capabilities and upgrading process in the hotel industry

By building on the previous discussion, the core question now involves ascertaining the factors that can trigger an upgrading process. In this respect, the process of upgrading within GVCs depends on the dynamics of the TCs accumulated by the firms over the years. The investment by SMEs in specific capabilities enables the transmission of technology and knowledge across the GVCs (Hansen and Ockwell, 2014). In other words, SME upgrading in GVCs relies on the innovative capabilities of the firm (Mehta, 2022). Specifically, studies into the industrial sector further argue that the scarcity of innovation capabilities is the major challenge to those SMEs hoping to capture more added value within GVCs (OECD, 2008). These investigations enable us to confirm that TCs constitute the skills that SMEs need for their upgrading in GVCs.

The RBV has been employed to analyse TCs (Su *et al.*, 2021). Capabilities are derived from tangible and intangible resources (human, technological physical, reputational or financial),

which are fundamental for the key competences of a firm, and explain its performance (Kruessi and Bazelmans, 2022). Furthermore, not only do capabilities involve resources, but they also involve a mixture of abilities and knowledge that the business develops throughout its existence, thanks to a continuous process of learning and improvement. Capabilities are based, to a great extent, on accumulated organisational knowledge, which allows the business to respond to stimuli by means of routines (Galende and De la Fuente, 2003). The capture of technological knowledge is fundamental for firms to survive in a world characterised by change provoked by the introduction of innovation (Morrison *et al.*, 2008; Yodchai *et al.*, 2022).

According Lall (2001), accumulation of TCs demands a complex mix of investment in core resources. The acquisition of equipment can help broaden these capabilities, but it is also necessary to improve the sources or channels that enhance the transfer of knowledge and the internal process of knowledge creation and innovation. Certain types of investments allow companies to improve their TCs and gain access to and adopt new technologies. In this respect, Mehta (2022) states that continuous investment in human capital and R&D infrastructure, in addition to buying, absorbing and assimilating foreign technologies, helps in building TCs. These efforts regarding internal R&D investment and R&D contracts with external providers help SMEs expand their capacity to absorb knowledge and to innovate (Marco-Lajara *et al.*, 2018). Furthermore, capital expenditure on information and communication technology (ICT) is fundamental for the development of TC in this day and age (Ali *et al.*, 2015). Even investment in training in a sector such as tourism, which has traditionally been characterised by a low level of staff training, has been highlighted as a crucial way to improve TCs today (Marco-Lajara *et al.*, 2018). In this respect, recent research has found that investment in employee training in tourism firms is fundamental for improving the efficiency in managing Intellectual Capital (Ognjanovic *et al.*, 2023).

Although innovation capabilities are essential in upgrading in GVCs (Su *et al.*, 2021), few studies in tourism sector research have examined how TCs are built up and then applied to the upgrading process of SMEs (Kruessi and Bazelmans, 2022). Certain studies have found that not tour operators only have played that role stimulating innovation in tourism firms from different parts of the world (Christian, 2016), but they also helped to improve various managers' operational capabilities that positively influence the company's competitive advantage (Su *et al.*, 2021).

Research model and hypotheses

In order to analyse the influence of worldwide intermediaries (especially tour operators) on the process of investment in TCs of SME hotels, the research model presented in Figure 1 is proposed. The model combines GVC theory and the RBV. In particular, the concepts of upgrading and TCs are key to our analysis. In light of this model, this paper aims to support the following general hypothesis:

Tour operators, in their role as leaders of tourism global value chains, induce the technological upgrading of SME hotels.

SME hotels in GVCs need to improve and increase in their competitiveness to operate with tour operators and prevent being replaced with other suppliers. In this way, SMEs invest in a set of tangible and intangible resources that allow them to accumulate TCs (Mehta, 2022). Therefore, the competitive pressure within GVCs may boost the upgrading processes of local suppliers (OECD, 2008).

In particular, our model considers five types of investments.

First, although R&D activities have not traditionally been linked to the tourism industry in the literature (Drejer, 2004), research shows that this sector currently requires an

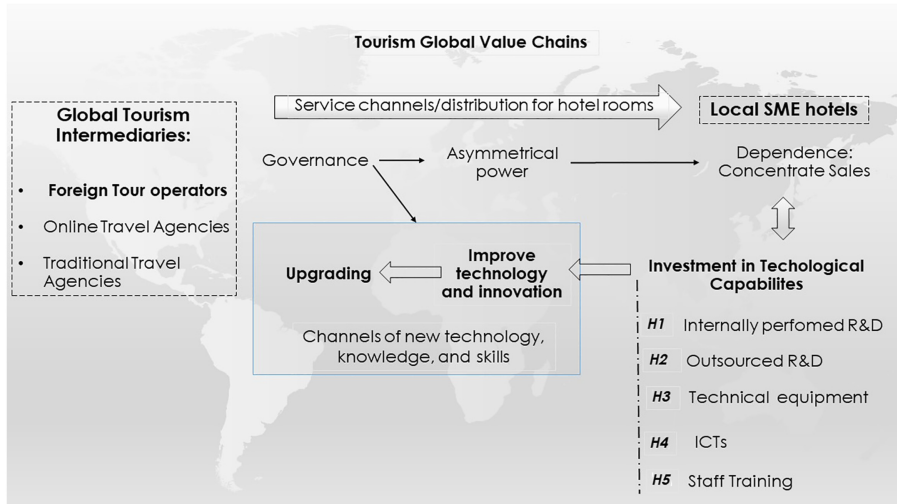


Figure 1.
Tourism global value chains

Source(s): Author's own creation

increasing amount of R&D-based knowledge (Vila *et al.*, 2011) and new knowledge to innovate (Orfila-Sintes and Mattsson, 2009). In this respect, two hypotheses are proposed in this paper.

- H1. A positive relationship exists between the proportion of sales through foreign tour operators and the investment in internally performed R&D of SME hotels.
- H2. A positive relationship exists between the proportion of sales through foreign tour operators and the investment in outsourced R&D of SME hotels.

On the other hand, the acquisition of embodied technology (machinery and other goods) and of ICTs has also been considered in manifold research on technological activities of firms in various sectors (Ali *et al.*, 2015) and features among the most characteristic sources of technological knowledge for hotels (Ruiz-Molina *et al.*, 2011). Certain scholars have stated that those investments compensate for the lack of investment in R&D for innovation (Hjalager, 2002), since they present an easy way of transferring knowledge (Ali *et al.*, 2015). Tour operators could put pressure on hotels to improve the quality of those services that require investment in equipment and facilities (Romero *et al.*, 2020), in particular, ICTs (Tieng *et al.*, 2022). In light of this, the following hypotheses are proposed.

- H3. A positive relationship exists between the proportion of sales through foreign tour operators and the investment in technical equipment and facilities of SME hotels.
- H4. A positive relationship exists between the proportion of sales through foreign tour operators and the investment in information and communication technologies (ICTs) of SME hotels.

Finally, another specific characteristic of the tourism sector that has been considered in relation to TCs involves the level of training of workers. Although, traditionally, research has associated tourism activities to a low level of staff training and a limited presence of graduates (Hjalager, 2002), the importance of staff training for tourism firm competitiveness has been increasingly acknowledged in studies carried out in recent decades (Ognjanovic *et al.*, 2023; Yam *et al.*, 2004).

Staff training could affect the absorptive capacity of tourism organisations (Thomas and Wood, 2015), increase the efficiency of managing intellectual capital (Ognjanovic *et al.*, 2023) and influence innovation (Ottenbacher and Gnoth, 2005).

Furthermore, empirical analyses have observed that trained employees improve innovation and profits (Marco-Lajara *et al.*, 2018). Tour operators could encourage hotels to improve staff training as an essential factor to meet their requirements of service quality. Staff training is required for the technology acquired with the above investments due to the influence of tour operators. In this respect, certain research has suggested the importance of investments in learning capability in order to improve competitiveness by using technological innovations (Yam *et al.*, 2004) and that learning is statistically associated to technological innovations (Tseng *et al.*, 2012). In this respect, the proposed hypothesis is.

H5. A positive relationship exists between the proportion of sales through foreign tour operators and the investment in staff training of SME hotels.

Methodology and data

Data collection, sample and measures

The data set used in this research was obtained through a survey carried out in 2016 on Spanish small and medium-sized hotel companies. For the purposes of this research, small and medium-sized firms are identified as organisations with fewer than 200 employees. The sample size has been calculated with a percentage error of $\pm 5.0\%$ and a confidence level of 90% and considers the most unfavourable situation in a binomial population ($p = q = 0.05$). It is representative of the Spanish hotel sector and has been stratified with size quotas. Interviewees were chosen randomly from the Iberian Balance Sheet Analysis System (SABI) database[1]. A computer-assisted telephone interview was aimed at the hotels' business owners/managers (rate of response = 22.29%). The final data set is composed of 375 SME hotels.

Dependent variables. The questionnaire[2] includes queries regarding five investment activities carried out for the improvement of the TCs of the companies in the three years prior to the survey (2013–2015) (Likert scale with four levels ranging from “none” (0) to “high” (3)).

- (1) Research and development (R&D) (systematic and creative activities carried out by companies) (R&D_in).
- (2) External R&D (activities that are conducted outside of an organisation or company by third-party entities) (R&D_ext).
- (3) Acquisition of buildings, machinery and non-information communication technologies equipment (non ICT).
- (4) Acquisition of software, computers and information communication technologies equipment (ICT).
- (5) Training for innovation activities (training).

All variables are considered innovative activities in the Oslo Manual (OECD, 2018).

Explanatory variables. The main explanatory factors whose effect is studied in this paper come from the analysis of the patterns of insertion of SME hotels into TGVCs. In this respect, hotel companies can use various commercialisation channels to sell stays in their rooms, including direct sales to tourists, tour operators (national or foreign), traditional travel agencies (national or foreign) or online travel agencies. These channels are used with varying degrees of intensity. In this study, given the special interest in international links, three variables are included in the models in order to identify the patterns of insertion into TGVCs.

Percentage of.

- (1) SME sales through foreign tour operators in 2015 (for_tour).
- (2) SME sales through traditional foreign travel agencies in 2015 (for_agen).
- (3) SME sales through online travel agencies, such as Booking and Expedia in 2015 (online_agen).

Control variables. In order to achieve control of the factors influencing the investment decisions of SME hotels to enhance their TCs, two sets of control variables are used in this analysis.

First, the entrepreneurial orientation (EO) of the companies has been considered in the analysis as an antecedent of technological competencies (Rigtering *et al.*, 2014). Bouncken *et al.* (2014) showed that EO increases firm innovation within a vertical alliance. In this respect, tour operators could be more interested in those hotels with an entrepreneurial management, and these hotel companies could also be more concerned about the development of their innovation capabilities. Therefore, a hypothetically observed relationship between the dependence of the hotels on foreign tour operators and the higher investment in TCs does not necessarily imply the causal relationship proposed by the research hypotheses in this paper. As part of the specification strategy to control for this variable, indicators of EO were included in the models as proxies for the quality of hotel management.

The questionnaire used in the survey includes six questions adapted from Covin and Slevin (1989) for the measurement of two components of EO: risk-taking and proactiveness. A factor analysis (with a varimax rotation) identifies two factors with eigenvalues greater than 1: the first factor represents the attitude of respondents towards risk (Cronbach's alpha = 0.776), and the second factor represents the proactive attitude (Cronbach's alpha = 0.907). These factors are incorporated in the econometric regressions.

- (1) Attitude towards risk (risk_taking).
- (2) Attitude towards proactiveness (proact).

Furthermore, a set of variables have been introduced to control other characteristics that are relevant in the process of creating and disseminating technology. In this regard, the managers or business owners were asked about the level of education (education) of the employees, the size of the firm (size), the cooperation activities with other enterprises and/or institutions during the period 2013–15 (cooperation) and their participation in business chains (chain) and in corporate business groups (group) (Alsos *et al.*, 2014).

The descriptive indicators of the sample are presented in Table 1. The average profile of an SME hotel in the data set is an independent small hotel company with 27 employees, which is not part of a hotel chain or a corporate group. This average hotel has a medium level of investment in their TCs, whereby the most important investment is in ICT equipment, while the investment in staff training is the least relevant. Approximately a third of their overall sales comes through foreign tourism intermediates, with online travel agencies as the most important intermediates, followed by tour operators.

Methodology

An ordinal regression analysis is employed to evaluate the hypotheses postulated in the theoretical section. The ordinal logistic regression takes the following form:

$$\ln(\theta_j) = \alpha_j - \beta_1 x_t - \beta_2 x_o - \beta_3 x_c \quad j = 0, 1, 2 \quad (1)$$

where θ_j is the probability of scoring up the different possible levels of the dependent ordinal variables, x_t represents the percentage of sales coming from tour operators, x_o stands for the rest of the variables that identify other distribution channels of the hotel and x_c symbolises the control variables. The probabilities are defined as follows:

Name	Description	Type	Mean	St. Dev
<i>Dependent variables</i>				
R&D_in	Level of R&D by firm	Ordinal	1.44	1.06
R&D_ext	Contract for R&D	Ordinal	1.50	1.02
Non_ICT	Investment in non-ICT equipment	Ordinal	1.46	1.05
ICT	Investment in ICT equipment	Ordinal	1.67	1.07
Training	Investment in training activities	Ordinal	1.42	1.05
<i>Independent variables</i>				
<i>Insertion of hotel SMEs in TGVCs</i>				
For_tour	Percent sales to foreign tour operators	Continuous	10.30	21.68
For_agen	Percent sales to foreign travel agencies	Continuous	3.44	10.78
Online_agen	Percent sales to on-line travel agencies	Continuous	22.69	23.04
<i>Control variables</i>				
Risk_taking	Attitude towards risk (factor)	Continuous	0	1
Proact	Proactive attitude (factor)	Continuous	0	1
Size	Number of employees	Continuous	27.18	38.02
Education	Employees with a University degree (percent)	Continuous	23.50	24.34
Chain	Participation in a hotel chain	Dichotomous	21.33 · (1)	0.41
Group	Participation in a corporate group	Dichotomous	21.60 · (1)	0.41
Cooperation	Cooperation for innovation	Dichotomous	19.73 (1)	0.40
Note(s): (1) Percentage of affirmative answers				
Source(s): Author's own creation				

Table 1.
Descriptive indicators

$$\theta_j = \text{prob}(\text{score} \leq j) / \text{prob}(\text{score} > j) \quad j = 0, 1, 2 \quad (2)$$

The model is estimated using the maximum likelihood method. The test of parallel lines enables the plausibility of this assumption to be assessed. The implementation of this test to analyse the data used in this paper led to the acceptance of this null hypothesis, the only exception of the model being for the dependent variable non_ICT. Consequently, it can be stated that the ordinal logistic specification is suitable for four out of five models for the dependent variables.

In the case of the variable non_ICT, a simple linear regression and a multinomial regression model, which allow for different effects of predictors for different categories of the dependent variable, were also estimated, along with the ordinal logistic regression. Nevertheless, the results from the linear and the multinomial logistic regressions for the non_ICT dependent variable are similar to those achieved with ordinal regression analysis, and the main conclusions remain unaffected. For this reason, in order to provide a clearer and simpler presentation, Table 2 reports the results of the ordinal logistic regression analysis for the variable non_ICT in the same way as for the rest of the dependent variables.

Results

We present the results of the econometric analysis in Table 2. Regarding the control variables, the participation in hotel chains (chain) and participation in corporate groups (group) do not influence the majority of the investments in TCs. The remaining control variables (size, education, collaboration, risk_taking and proact) exert significant effects on various types of investments, as expected.

However, the primary focus of this analysis involves the impact of worldwide intermediaries (tour operators, in particular) on firms' efforts to upgrade by means of

Table 2.
Ordinal regression
analysis

	R&D_in		R&D_ext		Non_ICT		ICT		Training	
	β	Sig	β	S.E	β	Sig	β	S.E	β	Sig
[$\theta = 0$]	-0.493	0.223	**	0.225	-0.837	***	-0.661	0.221	-0.623	***
[$\theta = 1$]	0.633	0.222	***	0.221	0.343	**	0.265	0.216	0.572	0.218
[$\theta = 2$]	2.673	0.263	***	2.858	2.246	***	2.082	0.243	2.544	0.260
For_tour	0.018	0.006	***	0.017	0.014	**	0.014	0.006	0.009	0.006
For_agen	0.005	0.011		-0.004	0.011		-0.004	0.011	0.011	0.011
Online_agen	0.003	0.004		0.003	0.004		0.007	0.004	0.002	0.004
Chain	0.125	0.325		0.529	0.332		0.402	0.326	0.443	0.324
Group	0.368	0.295		0.519	0.300	*	0.175	0.292	0.149	0.293
Size	0.003	0.003		0.000	0.003		0.007	0.003	0.001	0.003
Education	0.010	0.004	**	0.008	0.004	**	-0.002	0.004	0.002	0.004
Cooperation	0.655	0.260	**	1.069	0.271	***	0.134	0.255	1.431	0.269
Risk_taking	0.540	0.105	***	0.525	0.105	***	0.477	0.103	0.310	0.102
Proact	0.584	0.103	***	0.394	0.102	***	0.575	0.102	0.437	0.100
<i>Goodness of fit</i>										
Chi-square	108.951	(****)		114.462	(****)		80.356	(****)	71.916	(****)
Pseudo R^2	0.273			0.286			0.209		0.190	
									92.407	(****)
									0.237	

Note(s): Number of valid cases: 370. Link function: logic
Statistically significant differences at the 0.1 level (*), 0.05 level (**), 0.01 level (***) and 0.001 level (****)
Source(s): Author's own creation

acquiring new TCs. In this respect, the variable *for_tour*, which represents the percentage of stays in hotel rooms sold to foreign tour operators, is statistically significant in all the ordinal regressions carried out for the investments in the five different TCs. The signs of the coefficients are positive as expected. These results support the five hypotheses proposed in the theoretical section herein. Those hotels that rely more on foreign tour operators to sell stays in their rooms make a larger investment in TCs. From this standpoint, tour operators, in their role as leaders of the TGVCs, exert a positive influence on boosting investment in TCs in the hotel industry.

In contrast to the aforementioned point, other intermediaries, such as foreign travel agencies (*for_agen*) and online travel agencies (*online_agen*), seem to hold neither a positive nor a negative influence on the hotels' investment in TCs. The only exception is the positive and marginally significant effect observed for online travel agencies regarding the hotels' investment in ICT. Therefore, tour operators appear as having the greatest influence on hotels' investment in TCs.

The inclusion of alternative control variables, such as total sales instead of employment to measure firm size, yielded largely the same results. The effect of sales via national tour operators was also tested on other models, but these variables were revealed to be non-significant. The existence of moderation effects was tested by means of introducing different interactions between the sales via foreign tour operators and other control variables, such as being part of a hotel chain, cooperation and firm size. No relevant interaction effects were found. Finally, the presence of non-linear effects was also tested by means of including the square of the sales to foreign tour operators as a variable in our models. However, the quadratic term remained non-significant.

As stated earlier, our results indicate that the connection between foreign tour operators and hotel companies seems to favour the upgrading of SMEs to maintain and gain competitiveness. Notwithstanding, in order to confirm our core hypothesis, it is necessary to show that the significant effects captured in our regressions are not mere correlations, but the result of causal relationships.

Thus, foreign tour operators may be selecting only the entrepreneurially oriented hotels as their partners, and these types of hotels may also be highly concerned regarding the development of their TCs. This factor could act as a common cause for our dependent and explanatory variables, thereby producing a non-causal correlation between them (if it had been omitted from our regressions).

However, as mentioned previously, we controlled for this possibility in our model specification by means of including the variables related to entrepreneurial orientation (risk-taking and proactiveness). Furthermore, our results may be due to the fact that hotels with no relations with foreign tour operators could invest in their TCs in an effort to start working with such operators. In order to eliminate this (possible) effect, the same models were estimated using the subsample that excluded those companies that had no sales at all through foreign tour operators.

These models assess the effects of different levels of dependency on tour operators for companies that fit their minimum requirements and, therefore, operate with at least one tour operator. The results are presented in [Table 3](#). As can be observed, the positive effect of *for_tour* remains statistically significant except for the investment in staff training. The levels of statistical significance also decrease in the case of the investments in external R&D and machinery, non-ICT equipment and buildings.

Furthermore, to exclude the possibility of reverse causation, the same regressions were alternatively estimated with the dependence on tour operators measured in 2012 instead of in 2015. This represents a three-year lag regarding the measurement of investments in TCs. Results remain the same under this alternative definition of the explanatory variable.

Table 3.
Only hotels that
operate with foreign
tour operators

	β	R&D_in S.E	Sig	β	R&D_ext S.E	Sig	β	Non_ITC S.E	Sig	β	ITC S.E	Sig	β	Training S.E	Sig
[$\theta = 0$]	-0.889	0.496	*	-1.135	0.515	**	-1.533	0.506	**	-0.710	0.501		-1.427	0.506	**
[$\theta = 1$]	0.489	0.481		0.216	0.488		0.022	0.476		0.555	0.484		0.351	0.480	
[$\theta = 2$]	2.815	0.544	***	2.836	0.553	***	2.043	0.510	***	2.665	0.534	**	2.468	0.527	***
For_tour	0.020	0.008	**	0.014	0.008	*	0.013	0.007	*	0.018	0.008	**	0.006	0.007	
For_agen	0.015	0.029		-0.003	0.029		0.046	0.029		0.046	0.029		-0.037	0.029	
Online_agen	0.001	0.009		0.005	0.009		-0.002	0.009		0.011	0.009		0.002	0.009	
Chain	0.722	0.452		0.672	0.462		-0.257	0.443		0.472	0.450		0.259	0.444	
Group	-0.151	0.420		0.501	0.428		0.530	0.415		0.331	0.422		0.130	0.414	
Size	0.002	0.004		-0.002	0.004		0.002	0.004		0.007	0.005		0.002	0.004	
Education	0.004	0.008		0.012	0.008		-0.003	0.007		0.000	0.008		0.006	0.007	
Risk_taking	0.755	0.197	***	0.703	0.200	***	0.735	0.195	***	0.404	0.190	**	0.399	0.190	**
Proact	0.442	0.180	**	0.132	0.179		0.334	0.176	*	0.279	0.178		0.489	0.179	**
Coop	0.296	0.381		0.751	0.394	**	0.065	0.375		0.479	0.387		1.325	0.394	***
<i>Goodness of fit</i>															
Chi-square		46.962 (***)			42.813 (***)			33.175 (***)			35.740 (***)			39.855 (***)	
Pseudo R^2		0.296			0.277			0.219			0.235			0.257	

Note(s): Number of valid cases: 146. Link function: logic
Statistically significant differences at the 0.1 level (*); 0.05 level (**); 0.01 level (***)
Source(s): Author's own creation

Conversely, SME hotels that concentrate a substantial proportion of their sales on tour operators could be investing in their TCs in order to escape from this dependence on said tour operators. For instance, they could make efforts to improve their own websites and their online visibility in order to increase their direct sales. This could be achieved through investment in ICTs and could also involve additional requirements in terms of training their staff.

We tested whether this phenomenon takes place by comparing those hotels that reduce their dependence on foreign tour operators with those hotels that maintain or increase their reliance on foreign tour operators. To this end, a dummy variable was included in our regressions, which took value 1 for those hotels that had reduced their dependence on tour operators in the 2012–15 period. The coefficient of that variable in the models is positive and significant in the case of investment in ICT, non-ICT and in training, as can be observed in [Table 4](#). Therefore, those hotels that were decreasing their reliance on tour operators had invested more in the development of their TCs. These results indicate that certain hotels do invest in their TCs in order to reduce their dependence on tour operators.

However, this effect only explains part of the overall effect of tour operators on the SMEs' investment in TCs. The variable assessing the reliance on tour operators (as the percentage of the hotels' sales) is also still significant in all those regressions in [Table 4](#). Moreover, as an additional check, our baseline models were estimated, although only the data for those hotels that maintain or increase their reliance on tour operators were employed. The variable for `tour` also shows a positive and statistically significant influence on the investment in TCs in those regressions.

One of the possible reasons for tour operators to stimulate hotels to invest in their TCs could be the need to increase their interoperability with the systems of said tour operators. From the hotels' perspective, this investment could imply sunk costs, thereby further increasing their dependence on tour operators, who could benefit the most from these investments. However, the managers that were interviewed reported no specific investments to facilitate integration with tour operators: this effect would nevertheless be largely limited to the investment in ICT and would not explain the positive influence on the investment in the rest of the TCs considered in this paper.

Furthermore, the increase in ICT assets and in skills, even though originally oriented towards the connection with the tour operator, would easily cause other positive effects on the hotel's management in the medium and long term, such as facilitating the development of other online distribution channels. Nowadays, the use of channel manager software and its integration with property management software solutions (which implies investments in ICT and staff training) can allow hotel companies to manage their relationships with various tour operators, from both online and traditional travel agencies, thereby diversifying their distribution channels.

Hence, our results support the hypotheses [H1](#) and [H2](#). The results show that foreign tour operators encourage their SME hotel associates to invest in either `R&D_in` or `R&D_ext`. The hypotheses [H3](#), [H4](#) and [H5](#) are also supported by our results. The empirical analysis shows that foreign tour operators influence investment in `non_ict` and `ict`, and also influence investment in training.

Discussion and conclusions

Conclusions

The findings of our investigation demonstrate that reliance on foreign tour operators favours the development of TCs in the hotel sector by means of encouraging SMEs to invest not only in internal R&D projects and contracted R&D, but also in ICT and non-ICT equipment of a more technologically advanced nature, and in training activities for their staff. This result adds new evidence to the discussion on the influence that leaders of GVC exert over the upgrading of local clusters ([Mehta, 2022](#)).

Table 4.
Including dummy for hotels that diminish their dependence on tour operators

	R&D_in		R&D_ext		Non_ITC		ITC		Training	
	β	Sig	β	S.E	β	Sig	β	S.E	β	Sig
[0 = 1]	-0.296		-0.334	0.339	-0.555		-0.062	0.334	-0.099	
[0 = 2]	0.816	**	0.851	0.339	0.704	***	0.882	0.335	10.145	***
[0 = 3]	2.956	***	3.251	0.388	2.632	***	2.820	0.368	3.221	***
For_tour	0.016	***	0.015	0.006	0.010	*	0.014	0.006	0.005	**
For_agen	-0.002		-0.006	0.011	-0.010		-0.007	0.011	0.010	
Online_agen	0.000		0.002	0.005	0.005		0.008	0.004	0.002	*
Chain	0.138		0.290	0.353	-0.008		0.397	0.350	0.542	
Group	0.416		0.508	0.321	0.412		0.162	0.318	0.039	
Size	0.003		0.002	0.003	0.008	**	0.008	0.003	0.002	**
Education	0.008	*	0.010	0.005	-0.007	**	0.003	0.005	0.004	**
Cooperation	0.437	***	1.087	0.294	0.046	***	0.460	0.283	1.464	***
Risk_taking	0.585	***	0.526	0.116	0.515	***	0.257	0.112	0.225	**
Proact	0.597	***	0.355	0.112	0.546	***	0.369	0.111	0.417	***
Decreases_tour	0.439		0.423	0.289	0.556	*	0.770	0.287	0.716	**
<i>Goodness of fit</i>										
Chi-square	92.227 (***)		91.965 (***)		72.731 (***)		65.467 (***)		75.844 (***)	
Pseudo R ²	0.275		0.275		0.223		0.204		0.231	

Note(s): Number of valid cases: 312. Link function: Logistic
Statistically significant differences at the 0.1 level (*); 0.05 level (**); 0.01 level (***)
Source(s): Author's own creation

This issue is a matter of controversy in the literature, particularly in the case of the tourism sector. Certain studies have suggested that tour operators could have a negative impact on innovation in the local hotels that operate with them (Bastakis *et al.*, 2004; Tejada and Moreno, 2013). These studies point out that global tour operators demand high-quality standards with low contract prices, thereby pressuring SME hotels into decreasing their benefit. This could limit the resources available for technological upgrading.

However, this paper shows that tour operators could positively influence the acquisition of TCs in the hotel industry, which is in line with several previous studies that have observed their positive impacts on the upgrading of hotel firms (Christian, 2016; Romero and Tejada, 2020; Rønningen, 2010). As analysed in our paper, this positive effect comes from various channels. Traditional and small family-run hotels may invest more in TCs since foreign tour operators require them to have those TCs in place in order to start a joint operation. Furthermore, foreign tour operators encourage hotels with which they are already operating to also make those investments to satisfy their quality standards. Moreover, certain hotels with a high dependence on foreign tour operators invest in TCs to escape, to a certain extent, from the influence and commercial pressure of said intermediaries. These three mechanisms, while different, all lead towards tour operators playing a positive role in the development of TCs in the hotel industry in Spain. Not only can technological upgrading favour the competitiveness of tourism companies and destinations, but it can also increase the value added by local companies and improve the satisfaction of tourists. These results are consistent with analyses conducted for GVCs in the industrial sector (Mehta, 2022).

Theoretical contribution

This paper contributes to a better knowledge of the functioning and characteristics of the governance regime in the tourism sector and its implications for the upgrading processes in SME hotels. To date, very few studies have analysed the tourism sector based on the concepts and categories of the GVC literature, and, to the best of our knowledge, this is the first attempt to explore the influence on the development of the TCs of SME hotels by combining GVC concepts and the RBV (see Kruesi and Bazelmans, 2022). This integration of approaches to analyse the hotel industry constitutes an innovative theoretical framework that bridges a gap in the tourism research literature and contributes towards explaining the technological evolution of the tourism industry.

The findings confirm that tour operators positively influence the acquisition of TCs in the hotel industry, and they also reveal three causal mechanisms through which these effects take place. These mechanisms operate in a dynamic way, through different stages of the relationship between tour operators and SME hotels: before initial contact is made and their operations are set in motion; during the development of their relationship; and when SME hotels strive to reduce their dependence on tour operators.

Overall, tour operators play a positive role in the modernisation of the hotel industry by inducing, both intentionally and unintentionally, the development of TCs in SME hotels. In this way, tour operators, as leaders assuming the governance of the TGVC, can stimulate the technological upgrading of hotel SMEs, by acting as key players in the evolution of the hotel industry.

Practical implications

The results of this paper have various implications for hotel management, since the hotels' performance depends, to a large extent, on how they take advantage of the technological upgrading to become more competitive in the market. This analysis should be carried out with a process perspective:

In a first stage, the development of TCs can represent a key factor that provides hotels with access to broader markets through global tour operators. Our results indicate that those SME hotels that want to establish and/or maintain a close relationship with international tour operators need to make a significant effort to improve their TCs. Small family-run hotels whose specialisation is in national tourism could expand their traditional markets by means of operating with international tour operators, although this does imply significant investment in TCs.

In a second stage, the profitability of the hotels already inserted in TGVC could be limited due to the effect of tour operators on the prices and other conditions of the supply. However, in this stage, the development of TCs due to tour operators' influence could help SME hotels maintain their profit margins and improve their competitiveness.

In a third stage, SME hotels participating in TGVC can specifically implement investments in TCs to prevent excessive dependence on particular tour operators and online travel agencies (i.e., through fostering direct online sales). Therefore, beyond the immediate dependence on tour operators and their possible impact on the profit margins of hotel companies, the development of TCs can lead to greater independence of hotel SMEs. This could constitute a channel for the improvement of results of hotel firms in the future.

In this respect, our proposed process is consistent with the phases proposed by [Mehta \(2022\)](#) for the electronics industry. The processes described and the results obtained in our paper represent pioneering work in the tourism sector.

From the tourism policy perspective, the results have implications, since public administrations may play a role in boosting the development of hotel TCs in order to increase their competitiveness and their added value in this sector ([Rodríguez et al., 2014](#)). By means of supporting SME hotels' efforts to improve their TCs, public administrations can enhance the competitiveness of the local hotel industry and increase the value added by the local tourism sector. Those SME hotels equipped with higher TCs enjoy a wider range of options to operate with global tour operators, thereby enhancing their potential market. Moreover, by means of supporting TCs, public administrations can help SME hotels in diversifying their distribution channels which, in turn, obviates excessive dependence on tour operators.

Limitations and future research

This paper involves a number of limitations. The results for Spain as a whole are not necessarily applicable to other countries or specific areas, for instance, local "sun, sea, and sand" destinations. In this respect, as pointed out above, previous findings show results that are contradictory to those presented in this paper. Likewise, in order to confirm the findings of our study and ensure the causal nature of the relationships observed, a longitudinal research design would be appropriate. Furthermore, our data fail to capture the possible changes affecting tourism GVCs due to the Covid-19 pandemic. However, studies such as [Kahveci \(2022\)](#) and [Le and Phi \(2021\)](#) show that SME hotels have not halted their investments, and have only postponed their non-essential renovations, and therefore the investment and business model innovation have in fact been strategic responses to Covid-19. Finally, it would be interesting to analyse the final impact, in terms of profitability, of the investments in TCs in relation to the links between tour operators and hotels, thereby opening up avenues for future research on the controversial relationship between tour operators and the hotel industry.

Notes

1. SABI data set includes financial accounts of Spanish and Portuguese firms (see <https://www.informa.es/en/business-risk/sabi>).

2. https://www.researchgate.net/publication/315011662_Tourism_SMEs_Global_Value_Chains_and_Innovation_Accommodation_Questionnaire?channel=doi&linkId=58c82cf1aca2723ab16b8743&showFulltext=true

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